DETAILED ACTION

Response to Arguments

1. Applicant's arguments, in the notice of appeal filed 02/19/2008, with respect to the rejection(s)of claim(s) 1-20 under 102 (b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Brin et al (Near Neighbor Search in Large Metric Spaces, Nov 20, 1995).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (Clustering by Pattern Similarity in Large data Sets, ACM SIGMOD' 2002 June 4-6, Madison Wisconsin, USA) in view of Brin et al (Near Neighbor Search in Large Metric Spaces, Nov 20, 1995).

As to claim 1, teaches a method for use in finding near-neighbors in a set of objects comprising the steps of: identifying subspace pattern similarities that the objects in the set exhibit in multi-dimensional spaces (identifying subspace clusters in high-dimensional data sets, section 1.3); and defining subspace correlations between two or more of the objects in the set based on the identified subspace pattern similarities for use in identifying near-neighbor objects. Wang

discloses clustering by pattern similarity in large data sets (see abstract), including the further limitation wherein the distance function -comprises the following: given two data objects x an d y, a subspace S, and a dimension k € S, the sequence-based distance between x and y is as follows: 7 dist k, S (x, y) =max i € S (xi-yi)- (xk - yk) (see section 4.1: Pairwise Clustering, column 2, lines 1-7; in order to increase the efficiency of determining the pattern similarity) . While Wang et al meets a number of the limitations of the claimed invention, as pointed out more fully above, Wang et al. teaches clustering by pattern similarity rather than defining subspace correlations between the objects to identify nearest neighbor . Specifically, Brin et al. teaches a simplified algorithm (section 4.1 and pages 8-10) wherein the model of finding near neighbors in a large metric space wherein every data type has some degree of correlation in its distribution, it must be exploited to get good performance in a near neighbor search. It would have been obvious to one of ordinary skill in the art to use the nearest neighbor statistical tool in Wang tool in order to compute a relatively fast computation to narrow the search quickly and then apply proper edit distance to complete the search. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claims 2, Wang et al. in view of Brin et al., teaches the method of claim 1, wherein the identifying step further comprises the step of creating a pattern distance index (Euclidean distance, section 1.1).

As to claim 3, Wang et al. in view of Brin et al., Brin et al. teaches the method of claim 1, wherein the multi-dimensional spaces comprise arbitrary spaces (arbitrary metric spaces, page 4, Large Metric Spaces, section 3).

As to claims 4- 5, Wang et al. in view of Brin et al., Wang et al. teaches the method of claim 4, wherein the subspace dimensionality is an indicator of a degree of similarity between the objects (section 4.1).

As to claim 6, Wang et al. in view of Brin et al., Wang et al. teaches the method of claim 1, wherein data relating to the objects is static (there is no coherence need to be related by shifting or scaling the objects, section 1.4).

As to claim 8, Wang et al. in view of Brin et al., Wang et al. teaches the method of claim 1, wherein data relating to the objects comprises gene expression data (the gene expression data are organized as matrices, section 1.2).

As to claims 7 and 9, Wang et al. in view of Brin et al., Wang et al. teaches the method of claim 1, wherein data relating to the objects comprises synthetic data and dynamic data (synthetic and real life data sets, section 5).

As to claim 10, Wang et al. in view of Brin et al., Brin et al. teaches the method of claim 1, wherein identifying the subspace pattern similarities comprises a comparison of any subset of dimensions in the multi-dimensional spaces (section 4.4, page 9).

As to claim 11, Wang et al. in view of Brin et al., Wang et al. teaches the method of claim 1, wherein identifying the subspace pattern similarities comprises an ordering of dimensions in the multi-dimensional spaces (section 4.1, *S (x, y, 7-) = {dxa – dya I a € T})*

. As to claims 12- 13, Wang et al. in view of Brin et al., Wang et al. teaches the method of claim 12, wherein a first pair in the sequence of pairs comprises a base of comparison for one or more remaining pairs in the sequence of pairs (figure 13).

As to claim 14, Wang et al. in view of Brin et al., Wang et al. teaches the method of claim 12, wherein the sequence of pairs is represented sequentially in a tree structure comprising one or more edges and one or more nodes (section 4.3: Main algorithm and figure 10).

As to claim 15, Wang et al. in view of Brin et al., Wang et al. teaches the method of claim 2, wherein creating the pattern distance index comprises use of pattern-distance links (figure 9-10).

As to claim 16, Wang et al. in view of Brin et al., Wang et al. teaches the method of claim 1, wherein the process is optimized by maintaining a set of embedded ranges (embed random value ranges from 0-500, section 5.1).

As to claim 17, Wang et al. in view of Brin et al., Wang et al. teaches the method of claim 1, wherein the subspace correlations comprise a distance between two or more of the objects in the set (objects based on their distances which are measured by distance function e.g. Euclidean; section 6).

The limitation of claim 18 has been addressed above except for the following:" performing a near neighbor search". Brin et al teaches that limitation in section 4, GNAT (pages 7-8).

Claims 19-20 differ from claim 1 only in that claims 19-20 are program claims whereas, claim 1 is an apparatus claim. Thus, claims 19-20 are analyzed as previously discussed with respect to claim Y above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew W. Johns/
Primary Examiner, Art Unit 2624

Nancy Bitar 6/22/2008